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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,427	09/10/2004	Haim Livne	UEY	6322

7590 05/12/2008

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EXAMINER	
RAMOS, JAVIER J	
ART UNIT	PAPER NUMBER
4142	

MAIL DATE	DELIVERY MODE
05/12/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/507,427	LIVNE, HAIM	
	Examiner	Art Unit	
	JAVIER J. RAMOS	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/10/04, 4/3/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-33 are pending in this application.

2. Acknowledgment is made of the preliminary amendment to the specification submitted on **[9/10/04]**.

3. Claims 1, 4-12, 14-16, 18, 22, 24 and 30-31 have been amended **[9/10/04]**.

Priority

4. Acknowledgment is made that this application is a national stage filing under 35 U.S.C. 371 of international application no. **PCT/IL02/00277** filed on **3/12/02**.

Drawings

5. The drawings filed on **9/10/04** are approved for the purpose of examination.

Information Disclosure Statement

6. The information disclosure statements (IDS), submitted on **9/10/04 and 4/3/08**, are in compliance with the provisions of 37 CFR 1.97, and have been considered; copies are enclosed with this office action.

Claim Objections

7. Claims 10, and 15-16 are objected to because of the following informalities:

Claim 10 recites "wherein said plurality of rows comprises ten **of** more rows".

Claims 15-16 recite an apparatus "according to **any of** claim 1".

Appropriate correction is required.

8. Claims 19-21 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 19 recites a "[p]rinting apparatus, comprising: apparatus according to claim 18". Claim 18 however depends upon claim 1 which recites "[a]n apparatus for exposing, in a binary manner, a photoreceptive surface having a width and having relative movement with an irradiator in a direction perpendicular to the width, comprising", which is a component of a printing apparatus. Claims 20 and 21 are objected to as depending on the objected to claim 19. Please see MPEP § 608.01(n).

9. Claims 23-25 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claims 23 and 24 recite a "[p]hoto-printing apparatus, comprising…for a photosurface according to claim 22". Claim 22 however depends upon claim 1 which recites "[a]n apparatus for exposing, in a binary manner, a photoreceptive surface having a width and having relative movement with an irradiator in a direction perpendicular to the width, comprising", which is a component of a photo-printing apparatus. Claim 25 is objected to as depending on the objected to claim 24. Please see MPEP § 608.01(n).

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

12. Claim 22 recites the limitation "the photoreceptor". There is insufficient antecedent basis for this limitation in the claim. No "photoreceptor" has been referenced in the preceding parts of this claim. The phrase "the photoreceptor is a photosurface", for the sake of compact prosecution, will be treated as "**the photoreceptive surface**" due to the fact that no "photoreceptor" was disclosed in the previous parts of the claim.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 1-23 and 26-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fork, US Patent No 5,936,657 [hereafter Fork], published on Aug 10, 1999 in view of Florence, US Patent No 5,825,400 [hereafter Florence], published on Oct 20, 1998.

15. In regards to claim 1, Fork teaches an apparatus for exposing, in a binary manner **(Col. 3, Lines 12-15, each light emitter turns on and off corresponding to a pixel)**, a photoreceptive surface having a width and having relative movement **(Fig. 1, Object 14, "a photoreceptor" with a movement direction of Fig. 1, Object 24)** with an irradiator in a direction perpendicular to the width **(Fig. 1, Object 20, an "LED array"; Fig. 2, Object 25, "printbar")**, comprising: an irradiator comprising a plurality of rows of substantially identical light sources, each said row of light sources having an axis generally directed along said width, said rows being spaced in a direction generally perpendicular to said width to form a generally rectangular array of light sources **(Fig. 1, Object 20; Fig. 2, Object 25; Col. 4, Lines 39-40, "includes 64 rows of pixels extending in the direction of the rotation of the photoreceptor")**; and a

controller that controls activation of the light sources to selectively irradiate portions of said photoreceptive surface to form a latent image thereon during said relative motion **(Fig. 1; Col. 3, Lines 21-28, Lines 40-47)**, using fewer than all of the light sources available for illuminating a pixel to be printed **(Col. 3, Lines 40-47, "deactivating all rows of the array except for one selected row")**.

However, Fork does not specifically teach wherein the controller controls the activation of the light sources such that at least some pixels in a row are exposed utilizing light sources from different rows of light sources; and wherein the controller controls the light sources such that each of said pixels to be printed that is irradiated is exposed to a same amount of light.

On the other hand, Florence teaches wherein the controller controls the activation of the light sources such that at least some pixels in a row are exposed utilizing light sources from different rows of light sources **(Fig. 4; Col. 8, Lines 9-26, "both image the same scan line306, or the second array 304 maybe be separated, or offset, in the process direction from the first array")**; and wherein the controller controls the light sources such that each of said pixels to be printed that is irradiated is exposed to a same amount of light **(Fig. 9; Col. 12, Lines 41-58; Col. 3, Lines 9-15)**.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the multiple light element imaging process with overlap of Florence into the LED imaging device of Fork because both Florence and Fork teach LED based imaging devices **(Fork: Fig. 1; Florence: Fig. 1)**; further, both teach the use of multiple LED print head elements **(Fork: Col. 3,**

Lines 40-47; Florence: Figs. 4, 17 and 26); and, both are in the same field of endeavor.

Thus, it would have been obvious to incorporate the multiple light element imaging process with overlap of Florence into the LED imaging device of Fork to allow users of Fork to expose pixels with multiple LEDs from different rows of LEDs **(Florence: Fig. 4)**.

16. In regards to claim 2, Florence teaches when rows of pixels to be printed are each illuminated by two rows of light sources, one row of light sources illuminating pixels on one end of a row of pixels and a second row of light sources illuminating pixels on the other end of the row of pixels, with both rows illuminating pixels in an overlap region of the row of pixels to be printed, wherein light sources outside the overlap region are controlled by said controller such that each of said pixels to be printed that is irradiated is exposed to a same amount of light **(Figs. 17 and 18, show the light sources illuminating different ends of pixels with a distinct overlap region within the row to be printed; Figs. 21-23, show constant illumination along the entire width of pixels; Col. 3, Lines 9-15)**.

17. In regards to claim 3, Florence teaches the light sources comprise light emitting diodes **(Col. 7, Lines 47-60, "LED elements")**.

18. In regards to claim 4, Florence teaches each row of said plurality of rows of light sources are on a different print head **(Figs. 4 and 17)**.

19. In regards to claim 5, Fork teaches more than one of said plurality of rows of light sources are on a single print head **(Col. 4, Lines 39-48, "64 rows of pixels")**.

20. In regards to claim 6, Fork teaches all of said plurality of rows of light sources are on a single print head **(Col. 4, Lines 39-48, "64 rows of pixels")**.

21. In regards to claim 7, Fork teaches at least two of said plurality of rows are formed on a monolithic substrate **(Col. 4, Line 6, "printbars on a substrate")**.

22. In regards to claim 8, Florence teaches said plurality of rows comprises fewer than four rows **(Fig. 2)**.

23. In regards to claim 9, Fork teaches said plurality of rows comprises between five and nine rows **(Fig. 3, shows five rows)**.

24. In regards to claim 10, Fork teaches said plurality of rows comprises ten of more rows **(Col. 4, Lines 39-48, "64 rows of pixels")**.

25. In regards to claim 11, Fork teaches said controller is operative to expose pixels along a column of pixels utilizing a light source situated in said column chosen in a random or quasi-random manner **(Col. 3, Lines 40-47, "a different operable row as the selected row")**.

26. In regards to claim 12, Florence teaches said light sources are chosen in accordance with a fixed repeat **(Col. 14, Lines 44-51, "each of the imaging device elements is synchronized")**.

27. In regards to claim 13, Fork teaches the light sources from which the exposing light sources are chosen, comprise a set of light sources, chosen to minimize artifacts **(Col. 3, Lines 40-47, "inoperable" rows that would cause artifacts are deactivated and a new fully operable row is chosen)**.

28. In regards to claim 14, Florence teaches said controller is operative to expose pixels along a column of pixels utilizing a plurality of light sources situated in said column **(Figs. 17 and 18, show the light sources illuminating different ends of pixels with a distinct overlap region within the row to be printed; Figs. 21-23, show constant illumination along the entire width of pixels; Col. 3, Lines 9-15)**.

29. In regards to claim 15, Florence teaches a motor that provides motion of said photoreceptor **(Fig. 1; Col. 6, Lines 24-30, "rotating photosensitive drum")**.

30. In regards to claim 16, Fork teaches a position sensor that provides an indication of position of said photoreceptor with respect to said rows of light sources **(Fig. 1, Object 12, "position encoder"; Col. 4, Lines 31-38)**.

31. In regards to claim 17, Florence teaches said controller activates said light sources, responsive to said indication of position **(Col. 6, Lines 45-48, "light 106 is selectively incident on the drum")**.

32. In regards to claim 18, Florence teaches the photoreceptive surface is a charged photoconductive surface and wherein exposure to light of the light sources selectively discharges the surface **(Col. 6, Lines 24-44, to "create a latent image, portions of the drum 102 are selectively exposed to light 106 causing those portions to become electrically conductive")**.

33. In regards to claim 19, Florence teaches a developer that develops the latent image with a colored toner to form a developed image thereon **(Col. 6, Lines 24-44, "latent image")**; said printing apparatus including a transfer station at which said developed image is transferred to a final substrate **(Fig. 1; Col. 6, Lines 46-65, "a fuser 114 melts the toner, causing it to fuse to the paper")**.

34. In regards to claim 20, Florence teaches the colored toner is a powdered toner **(Col. 6, Lines 46-65, a process of melting the powdered toner to fuse it to the paper).**

35. In regards to claim 21, Florence teaches the colored toner is a liquid toner **(Col. 6, Lines 5-10, "droplets of ink").**

36. In regards to claim 22, Florence teaches the photoreceptor is a photosurface and wherein exposure from said light sources forms a latent image in said photosurface that can be chemically developed to form a visible image **(Col. 6, Lines 13-17, "photographic print processes"; Col. 6, Lines 24-44, to "create a latent image, portions of the drum 102 are selectively exposed to light 106 causing those portions to become electrically conductive").**

37. In regards to claim 23, Florence teaches a developer that chemically develops the latent image to form a visible image **(Col. 6, Lines 13-17, "photographic print processes").**

38. In regards to claim 26, Florence teaches a method of pixelized image formation on a photosensitive surface **(Fig. 1; Col. 6, Lines 24-65)**, comprising: providing relative motion of the photosensitive surface relative to a multiplicity of light sources **(Fig. 1, Object 118, the direction of movement of the drum (102)**

in relation to the imaging device (116)), such that pixels to be printed on the surface pass a plurality of said light sources **(Figs. 4 and 17, show multiple light sources)**; and exposing a plurality of the pixels to be printed of the surface to more than one of said light sources **(Figs. 4 and 17, show multiple light sources)**, characterized in that the exposure of the exposed pixels to be printed is the same **(Fig. 9; Col. 12, Lines 41-58; Col. 3, Lines 9-15)**.

It is noted however that Florence does not specifically teach exposing a plurality of the pixels to be printed of the surface to more than one, but fewer than the plurality, of said light sources.

On the other hand, Fork teaches exposing a plurality of the pixels to be printed of the surface to fewer than the plurality of said light sources **(Col. 3, Lines 40-47)**.

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to combine the LED imaging device of Fork with the multiple light element imaging process with overlap of Florence because both Florence and Fork teach LED based imaging devices **(Fork: Fig. 1; Florence: Fig. 1)**; further, both teach the use of multiple LED print head elements **(Fork: Col. 3, Lines 40-47; Florence: Figs. 4, 17 and 26)**; and, both are in the same field of endeavor.

39. In regards to claim 27, Florence teaches when rows of pixels to be printed are each illuminated by two rows of light sources, one row of light sources illuminating pixels on one end of a row of pixels and a second row of light sources illuminating pixels on the other end of the row of pixels, with both rows

illuminating pixels in an overlap region of the row of pixels to be printed, wherein light sources outside the overlap region are exposed to a same amount of light **(Figs. 17 and 18, show the light sources illuminating different ends of pixels with a distinct overlap region within the row to be printed; Figs. 21-23, show constant illumination along the entire width of pixels; Col. 3, Lines 9-15)**.

40. In regards to claim 28, Fork teaches the at least one pixel is exposed to one or more of the light sources chosen randomly or quasi-randomly **(Col. 3, Lines 40-47, "a different operable row as the selected row")**.

41. In regards to claim 29, Florence teaches said one or more light sources is chosen in accordance to a predetermined repeat to reduce visual artifacts **(Col. 14, Lines 44-51, "each of the imaging device elements is synchronized")**.

42. In regards to claim 30, Florence teaches a plurality of pixels are exposed in accordance with the method **(Fig. 1; Col. 6, Lines 24-65)**.

43. In regards to claim 31, Florence teaches the image thus formed is a latent image and including developing the latent image to form a visible image **(Col. 6, Lines 24-44, to "create a latent image, portions of the drum 102 are selectively exposed to light 106 causing those portions to become electrically conductive")**.

44. In regards to claim 32, Florence teaches said developing comprises contacting the surface with a toner **(Col. 6, Lines 46-65, "surface then rotates past a toner supply")**.

45. In regards to claim 33, Florence teaches developing comprises chemical development **(Col. 6, Lines 13-17, "photographic print processes")**.

46. Claims 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fork in view of Florence as applied to claim 1, and further in view of Vergona, US Patent No 5,764,183 [hereafter Vergona], published Jun 9, 1998.

47. In regards to claim 24, Fork, as modified by Florence, teaches a latent image forming devices for a photosurface according to claim 22 **(Florence: Col. 6, Lines 13-17, "photographic print processes"; Col. 6, Lines 24-44, to "create a latent image, portions of the drum 102 are selectively exposed to light 106 causing those portions to become electrically conductive")**; and a developer that chemically develops the latent image to form a visible image **(Florence: Col. 6, Lines 13-17, "photographic print processes")**.

It is noted however that Fork, as modified by Florence, does not specifically teach a plurality of latent image forming devices for a photosurface; each said device emitting light of a different color.

On the other hand, Vergona teaches a plurality of latent image forming devices for a photosurface **(Col. 1, Lines 51-52, "LED's for forming color images on a photosensitive surface")**; each said device emitting light of a different color **(Abstract; Col. 1, Lines 51-52)**.

It would have been obvious to one of ordinary skill in the art to incorporate the multicolor image forming apparatus of Vergona into the LED image forming apparatus of Fork, as modified by Florence, because both Fork, as modified by Florence, and Vergona teach the creation of latent images on photosensitive surfaces **(Florence: Col. 6, Lines 24-44; Vergona: Col. 1, Lines 50-55)**, further, both use LEDs to form the latent images **(Florence: Col. 7, Lines 47-60; Vergona: Abstract)**; and, both are in the same field of endeavor.

Thus, it would have been obvious to incorporate the multicolor image forming apparatus of Vergona into the LED image forming apparatus of Fork, as modified by Florence, to allow users of Fork, as modified by Florence, to produce multi-colored images using different colored LEDs **(Vergona: Col. 1, Lines 51-52)**.

48. In regards to claim 25, Vergona teaches the colors include red, green and blue **(Abstract; Col. 1, Lines 51-52)**.

Conclusion

The prior art made of record:

a. US Patent No 5,936,657 A

b. US Patent No 5,825,400 A

c. US Patent No 5,764,183 A

The prior art made of record, but not relied upon:

d. US Application No 2003/0116694 A1 – teaches multiple LED elements per chip and compensation for uneven light distribution by regulating power to each LED individually

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAVIER J. RAMOS whose telephone number is (571) 270-3947. The examiner can normally be reached on Monday to Thursday - 9 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark K. Zimmerman can be reached on (571) 272-7653. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. J. R./
Examiner, Art Unit 2625

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